

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

LISTING OF THE CLAIMS:

Claim 1 (Currently Amended): A beam source comprising:

- a plasma generating chamber;
- a first electrode disposed in said plasma generating chamber;
- an antenna disposed in said plasma generating chamber so as to face said first electrode for generating plasma in said plasma generating chamber;
- a second electrode disposed in said plasma generating chamber so as to face said first electrode; and
- a power supply for applying a voltage between said first electrode and said second electrode to extract ions from the plasma generated by said antenna.

Claim 2 (Cancelled).

Claim 3 (Original): The beam source as recited in claim 1, wherein said antenna has a spiral shape, wherein said second electrode has a spiral shape positioned between adjacent spiral lines of said spiral shape of said antenna.

Claim 4 (Original): The beam source as recited in claim 1, wherein said antenna

comprises a plurality of divided antennas, wherein said second electrode comprises a plurality of divided second electrodes positioned between adjacent divided antennas.

Claim 5 (Original): The beam source as recited in claim 1, wherein said first electrode comprises an orifice plate having a plurality of orifices for neutralizing the ions extracted from the plasma.

Claim 6 (Original): A beam source comprising:

a plasma generating chamber;

a first electrode disposed in said plasma generating chamber;

an antenna disposed so as to face said first electrode for generating plasma in said plasma generating chamber;

a second electrode disposed between said antenna and said first electrode in said plasma generating chamber, said second electrode having a ring shape so as to surround said plasma generating chamber; and

a power supply for applying a voltage between said first electrode and said second electrode to extract ions from the plasma generated by said antenna.

Claim 7 (Original): The beam source as recited in claim 6, further comprising a container for defining said plasma generating chamber, said container having a wall which serves as said second electrode.

Claim 8 (Original): The beam source as recited in claim 6, wherein said first electrode comprises an orifice plate having a plurality of orifices for neutralizing the ions extracted from the plasma.

Claim 9 (Currently Amended): A beam processing apparatus comprising:
a stage for supporting a workpiece; and
a beam source for applying a beam to the workpiece supported by said stage, said beam source comprising:

- a plasma generating chamber;
- a first electrode disposed in said plasma generating chamber;
- an antenna disposed in said plasma generating chamber so as to face said first electrode for generating plasma in said plasma generating chamber;
- a second electrode disposed in said plasma generating chamber so as to face said first electrode; and
- a power supply for applying a voltage between said first electrode and said second electrode to extract ions from the plasma generated by said antenna.

Claim 10 (Cancelled).

Claim 11 (Original): The beam processing apparatus as recited in claim 9, wherein said antenna has a spiral shape, wherein said second electrode has a spiral shape positioned between adjacent spiral lines of said spiral shape of said antenna.

Claim 12 (Original): The beam processing apparatus as recited in claim 9, wherein said antenna comprises a plurality of divided antennas, wherein said second electrode comprises a plurality of divided second electrodes positioned between adjacent divided antennas.

Claim 13 (Original): The beam processing apparatus as recited in claim 9, wherein said first electrode comprises an orifice plate having a plurality of orifices for neutralizing the ions extracted from the plasma.

Claim 14 (Previously Presented): A beam processing apparatus comprising:
a stage for supporting a workpiece; and
a beam source for applying a beam to the workpiece supported by said stage, said beam source comprising:

- a plasma generating chamber;
- a first electrode disposed in said plasma generating chamber;
- an antenna disposed so as to face said first electrode for generating plasma in said plasma generating chamber;
- a second electrode disposed between said antenna and said first electrode in said plasma generating chamber,

said second electrode having a ring shape so as to surround said plasma generating chamber; and

a power supply for applying a voltage between said first electrode and said second electrode to extract ions from the plasma generated by said antenna.

Claim 15 (Original): The beam processing apparatus as recited in claim 14, wherein said beam source comprises a container for defining said plasma generating chamber, said container having a wall which serves as said second electrode.

Claim 16 (Original): The beam processing apparatus as recited in claim 14, wherein said first electrode comprises an orifice plate having a plurality of orifices for neutralizing the ions extracted from the plasma.

Claim 17 (Previously Presented): The beam source as recited in claim 1, wherein said antenna comprises at least one elongated conductive material.

Claim 18 (Previously Presented): The beam source as recited in claim 17, wherein said at least one elongated conductive material has a hooked shape or an arcuate shape.

Claim 19 (Previously Presented): The beam source as recited in claim 1, wherein said antenna includes a conductive material and an insulation member covering said conductive material.

Claim 20 (Previously Presented): The beam source as recited in claim 1, wherein said antenna comprises at least one looped conductive material.

Claim 21 (Previously Presented): The beam source as recited in claim 6, wherein said second electrode is disposed at a peripheral portion of said plasma generating chamber.

Claim 22 (Previously Presented): The beam source as recited in claim 21, wherein said antenna has a spiral elongated conductive material.

Claim 23 (Previously Presented): The beam processing apparatus as recited in claim 9, wherein said antenna comprises at least one elongated conductive material.

Claim 24 (Previously Presented): The beam processing apparatus as recited in claim 23, wherein said at least one elongated conductive material has a hooked shape or an arcuate shape.

Claim 25 (Previously Presented): The beam processing apparatus as recited in claim 9, wherein said antenna includes a conductive material and an insulation member covering said conductive material.

Claim 26 (Previously Presented): The beam processing apparatus as recited in claim 9, wherein said antenna comprises at least one looped conductive material.

Claim 27 (Previously Presented): The beam processing apparatus as recited in claim 14, wherein said second electrode is disposed at a peripheral portion of said plasma generating chamber.

Claim 28 (Previously Presented): The beam processing apparatus as recited in claim 27, wherein said antenna has a spiral elongated conductive material.